

**Mid-Atlantic ADA Center**  
**Promoting Independence and Access Through**  
**Responsible Design**  
**Part 1: Obligations and Sidewalk Basics**  
**APRIL 30, 2019**

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>> Recording started.

>> It's now 2:00. We will begin today's session, I will now --

>> Good afternoon, everyone.

>> Moderator. Nancy Horton.

>> Good afternoon, everyone. Thank you for joining us for the first session of our series on promoting independence and access through responsible design. Our session today will be presented by Melissa Anderson, professional engineer, specializing in pedestrian safety and access for people with disabilities. She was the transportation engineer for the U.S. Access Board, and worked to develop the most recent version of the

proposed public rights of way accessibility guidelines. Melissa currently owns her own company, providing pedestrian accessibility training across the country, and assisting state and local agencies in assessing, writing policies, and updating transition plans. She also serves as the third party consultant when clients find themselves facing compliance reviews or other enforcement actions. So, we are very excited about our session today. Without further ado, I'm going to turn things over to Melissa.

>> MELISSA ANDERSON: Four part series, talk about the laws and obligations, slide 15, and then we are going to talk about pedestrian access route basics. Our next webinar will include safe and accessible intersections, and that will be curb ramps, traffic signals, and street crossings. Third part will be curbside access, things you find off of the curb, bus stops, parking, passenger loading zones. Our fourth part will be talking about how to make this actually work on your projects. Getting things to be accessible in the public right-of-way I know is tough. We are going to dig into some of the how-to's at the end. Slide 16.

Today we are going to be talking about the obligations and the laws, and the technical requirements for pedestrian access routes, so we will talk about the laws, we will go into standards and guidelines, what Title II obligations are and the technical requirements for pedestrian access routes.

Slide 17.

Accessibility is a civil right, and there are actually three federal civil rights laws. I left out the Architectural Barriers Act, but it was signed by congress in 1968, and applied to

federal facilities. But the ones that we are most concerned about are 1973 Rehabilitation Act, Section 504, which applies to programs and activities that receive federal funds. In 1990, the Americans with Disabilities Act was signed in law by congress, and it prohibits discrimination in the provision of facilities, services and programs. The Americans with Disabilities Act has several different titles or chapters. Title II applies to state and local government. That is primarily what we will be talking about today. Slide 18. How do we know how to make something accessible?

In 1973, with the Rehabilitation Act, congress established the U.S. Access Board. The Access Board is a independent federal agency, made up of representatives from the major agencies in the federal government, the Department of Defense, Department of Education, transportation, Department of Justice, and several others, and then also has public members. They work together to help establish the minimum design criteria for accessibility. They are responsible for minimum criteria for telecommunications, like cell phones and websites, medical diagnostic equipment which is something that came up fairly recently, the built environment, which is buildings, sites and recreation areas, and also transportation, and transportation includes the infrastructure and it also includes vehicles, like buses and trains.

They are required to develop guidelines that establish the minimum level of access, and then other enforcing agencies have to adopt those guidelines, and then they can be enforced. When the Access Board sets minimum standards, another agency can go above and beyond.

Typically they will change the scoping, if they make any changes at all. Department of Justice took the 2004 architectural barriers, Americans with Disabilities Act accessibility guidelines, written by the Access Board, and they send it out for public comment, and determined that for instance, prison cells needed to be more accessible than what the Access Board had determined. The technical requirements stayed the same, but instead of 2 percent being required to be accessible, 3 percent were accessible. The Department of Transportation, likewise, they took the same guidelines in 2004, and developed their 2006 Department of Transportation ADA standards, and they added to the scoping that curb ramps had to have detectable warnings, and both of these standards primarily apply to buildings and sites. They don't specifically apply to the public right-of-way. There are other enforcing agencies, so the Department of Defense, Department of Education, general services, they all enforce standards that's been adopted from the minimum design criteria. Slide 19. In enforcement for public right-of-way, the agencies responsible for that are the Department of Transportation, and they were given that authority under Section 504 in the Rehabilitation Act. Enforcement through the Department of Transportation is complaint based. The Department of Justice also enforces the accessing the public right-of-way, and they have authority because they have to ensure that state and local agencies provide accessible programs and services and activities. Their enforcement typically is complaint-based. But they also have a program called Project Civic Access, and Project Civic Access is, I call

them DOJ S.W.A.T. team. They will come down on your community and they will do an evaluation of just a few elements, and they will take those as an example of probably what the rest of your community looks like. Then they will help you decide how you are going to meet the requirements of the Americans with Disabilities Act. You end up with a settlement agreement that generally requires you to do a self-evaluation, and make improvements. So complaints for civil rights violations are very easy to file. You can file one with the Department of Justice website. They obviously can't investigate every single complaint. But a lot of times a community will receive multiple complaints. Those are the ones that they tend to take a look at.

We talked about the general, we talked about the standards, and the Access Board being required to come up with minimums. In the public right-of-way, they have been working on coming up with the minimum design criteria for about 20 years. It's not finished yet. There is a question of what regulations apply. The ADA requires you to make your facilities accessible, but do you use the building standards, which are specifically designed for with buildings and sites in mind. Can you use guidelines that have not been finalized and approved? It is hard to figure out what to do sometimes. Slide 20. The overall regulation is that for program access, is that you cannot discriminate against people who have disabilities, in the state or local government activity or service or facility. What are you supposed to do? How are you supposed to design them so that we can ensure people who have disabilities can use them. One choice would be to use the

proposed accessibility guidelines for accessing the public right-of-way. Those have been developed, they have evolved over a very long time, but they haven't been, the final text has not been published by the Access Board. So it has not gone on to become an actual standard. You can also choose to use the 2010 ADA standards, they are meant for building sites and so they don't really fit the environment that you find in the public right-of-way. Or, if you are a professional, architect or engineer, where you are tasked with making design decisions every day and you stamp and take responsibility for those, you can just wing it.

Slide 21.

How do we decide what to do? Where do we look for the guidance? Several years ago now, I can't remember the year exactly, Department of Justice and Department of Transportation came up with a technical memo for resurfacing, and in that technical memo, they didn't make any new rules. They just clarified the intent of the rules that were already in existence. One of the things that is really important, and we are not talking about curb ramps or resurfacing right now, but one of the important things is that curb ramps have to follow the 2010 ADA standards. That is something that a lot of people don't understand, is that you can use the public right-of-way guidelines for areas that are not specifically covered in the building standards. There was a memo in 2005 from Federal Highway that pretty much recognized them as best practices. Federal Highway has not updated that memo, and you are going to possibly get some confusing messages in the near future. I've talked to the Access

Board and Federal Highway. They are not going to be coming out saying that public right-of-way guidelines are best practice, feel free to use them. The reason for that is they will some day, hopefully in the near future, put those out for public comment. When they go out for public comment, it's hard to say we want your comments, so we can make changes, we need to, it's hard to say that when you say these are best practices and that is what we are going to do. There is flexibility in design, and federal highway gives you the flexibility to use whatever information you have available to you, to make your pedestrian facilities accessible. So that could be the proposed public right-of-way guidelines, it could be the AASHTO guidelines for pedestrian facilities, AASHTO also provides guidance in their bike book on shared use paths, and AASHTO is the American association of state highway transportation organizations. There are also other books out there, the national association of city and towns also discusses pedestrian facilities. So you have flexibility. You don't have to use public right-of-way guidelines. Keep in mind though that they have evolved from the Access Board over time.

So we are going to talk about them mainly, but I'm going to point out to you areas where there is a difference in the standards.

Most of you are familiar with the public right-of-way guidelines. Everybody wants to know what the update is, and when it's going to be published so it can become a standard. The final rule that will be published was -- oh, slide 22. The final rule draft has been approved by the Access Board. It still has to be reviewed by the Office of

Management and Budget. When anybody makes a federal rule that will go out to the entire country, you have to determine what financial impact it will have on the communities that are impacted by it. That is the process that is still being undertaken by the Access Board. Once it's reviewed to make sure all the procedures were followed, that it doesn't have financial impact greater than the limit that is set, then it will be passed on by the management, Office of Management and Budget and published in the federal register. After that, it is up to the Department of Justice and the Department of Transportation to adopt it before it can become an enforceable standard. So, what is going on right now in the federal government is no rulemaking is happening. The public right-of-way guidelines probably will not come out during the current administration. Then it will still take time for them to be adopted to be standards.

Slide 23. What can state and local agencies do in the meantime? You have to review your policies, you have to provide accessible facilities, so if you can review your policies, make sure that what you are, how you are serving your population reflects accessibility, so people can get into your buildings, they can use your sidewalks, that you have accessible signals where you need them, review the policies on how those things come into being. Also review your standards. Take a look at your standard drawings, standard details, do they reflect accessible design? Something else to consider is, we all know that those design standards don't fit in a lot of places. Have policies set up so that you know what to do when the standards don't fit. How do you make decisions? Look at



those, and make sure that the answers reflect a desire to have everyone get around your system.

Also, provide education. So like we are doing today, find out what your options are, talk about what is going on, know what you are obligated to do, and how that impacts the work that you are doing. Enforcement at a local level, so the ADA requires you to make your facilities accessible, but you can't enforce a federal law at a local level. What you can enforce are your local laws. If you have policies that say, in standards, when you bid a project out for a contractor, you expect them to follow the standards that they bid on, and your inspection also has to be up to par so that your finished product is actually accessible. So you can't enforce the ADA, but you can enforce your local policies and make sure that your construction is accessible.

Okay. Obligations for access on slide 24, the Americans with Disabilities Act and all of the standards and guidelines have these three requirements. New construction has to be accessible. When you have the 2010 ADA standards or when public right-of-way becomes standard, when you build new construction, the expectation is that it's accessible. If you have an alteration to an existing facility, it has to be accessible to the maximum extent feasible or practicable within the scope of the project. Existing facilities, even if you haven't altered them in the last 50 years, still cannot deny access to persons with disabilities. Slide 25. We are going to talk about each one of these. New construction, new construction may be different than the way you think about it. Accessibility is the easiest to achieve in new

construction, because new construction is when you don't have any constraints. If you look at the picture on the left, it's a picture of a new development. They platted out lots and did the road design. It is the best opportunity you have to move dirt, make grades where you want them, establish a right-of-way that is wide enough to do what you need to do. New construction is expected to be accessible. It's pretty narrowly defined, so if you look at the picture on the bottom right, you see a goat path next to a highway going past a bus stop. If you were to put a sidewalk in there, it would not be new construction. It would be an alteration, which we are going to talk about. It's not new construction because you already have an established right-of-way. Slide 26, a project is an alteration if you are working within an established right-of-way. Like the picture with the bus stop, you are not altering the sidewalk, that isn't there. You are altering the right-of-way to add a sidewalk. When you have existing constraints, it's not always possible to meet all of the accessibility requirements. In alteration, you have to follow the new construction requirements to the extent practicable, within the scope of your project. There are two parts to that. The extent practicable, or feasible, means if you can't make it fully accessible, you make it accessible the best you can. And so if you can't make your sidewalk the same grade as the road because you have to go behind a culvert, you make it as wide as you can, within the scope of the project is if you are doing say a sidewalk project and you get to the corner, do you have to replace the pedestrian signal, not if it's not in the scope of your project.

So engineers have project limits, they may be

geographical, they may be based on the type of work being done. But you don't have to go beyond those scopes. One of the things that, where that comes up frequently is people will ask, do I have to put a curb ramp on the receiving end of the crosswalk if I fix the near side curb ramp and the answer to that is not if it's not in the scope of your project. But when you are making project decisions, it's important to document what they are. This comes up most when you are looking at making something accessible to the maximum extent practicable. It's important to document the existing conditions, what you considered, and why you made the final choice. If you could make a curb ramp longer, and a little bit flatter or steeper and shorter, why did you choose to do one or the other? Why did you think that was provided the best benefit for accessibility?

Slide 27. Existing facilities, communities are full of sidewalks and pedestrian access routes that haven't been changed in 50 years, and even those, if you haven't done any alterations to them, can't deny access to people with disabilities. The ADA requires Title II agencies which are state and local governments to have a self evaluation, and if you have more than 50 employees to also have a transition plan. When you do self evaluation, you have to look at all of the elements that may need structural modifications, to make them accessible. There is some real simple requirements, and that is that you get input from interested parties, and that helps you prioritize what you are going to fix first. Specify the steps for achieving accessibility. How are you going to do this? Are you going to do sidewalks when you do resurfacing? Are you

going to have an annual sidewalk project? Are you going to go through and fix trip and falls this year and next year something else. You need to specialize those steps which also includes a budget and schedule. Make sure the plan is available to the public, and with the web that is a simple thing to do. There has to be a person who is responsible for making sure the progress is made.

Okay, slide 28. Now we are going to talk about scoping a technical requirements. Slide 29. There are a lot of different kinds of pedestrian access routes, and pedestrian facilities. Sidewalks are the most common, we are all familiar with sidewalks. Shared use paths can be shared between pedestrians and bicycles, roller bladers, anybody, there are some places where certain mobility devices are not allowed on shared use paths and state laws have to sometimes be looked at when you are building shared use paths in some areas.

Shoulder of the road can be a pedestrian access route. As an engineer, I used to work for a state D.O.T., shoulder of the road is the shoulder of the road. We build it to support the pavement that cars drive on. However, if you have an area that is marked for pedestrian use, or you have an area where you know pedestrians will be using it on a regular basis, just because of the origins and destinations in the area, you need to consider meeting the accessibility requirements.

Slide 30. When you are looking at the different types of pedestrian access routes, you might have regular sidewalks, shared use path or a trail, and a pedestrian access route includes pedestrians only, and it serves the purpose of transportation and recreation. A shared use

path is also for pedestrians, but it includes bicycles, and designs for pedestrian use paths are based on bikes, mostly because of the high-speed use just like for a road, you have vertical curves and horizontal curves but they still have to be accessible and they are used for transportation and recreation. Trails are a whole different animal. The trails are meant for pedestrians, primarily for recreation. And trails are in lesser developed areas. They typically aren't paved. Just because you call something a trail doesn't mean you can use the trail standards. So, there is another set of guidelines, outdoor recreational guidelines, that provide trail standards or guidance. If you are in doubt, on what you are building, or what guidelines to use, you can contact the Access Board. And they will help you determine if you really are building a trail. Just because you call it Anderson trail, and it's a paved shared use path, doesn't mean you can use the trail guidelines.

Next slide. Here is our bus stop again. Do you have to provide sidewalks? The answer to that is no, not from a federal standpoint. If you provide sidewalks though, they have to be accessible and usable to people who have disabilities. So you don't have to provide a sidewalk, but if you do, everyone needs to be able to use it. Providing a sidewalk generally falls under a local jurisdiction, in their development plans. You may be required by your community or your state to provide a sidewalk when you put in a new development. But it's not a federal law. Next slide. I want to share a story, this is a gentleman that I met in the park when I was with my grandchildren.

Him and his family had come into the park, and there was a whole bunch of 'em, and they had boxes and bags

and they were obviously going to have a picnic. This young man gets around on a tricycle, and when I talked to his mom, she said that up until a month before, he wasn't able to get to the park, and he wasn't able to get there with his family because there weren't sidewalks that he could travel on safely and there weren't any curb ramps. When we think about whether or not to provide a sidewalk, we need to think about the additional benefits aside from just pedestrians being able to get around, it provides independence, and inclusion for people who might not otherwise be able to leave their own block.

These guys ended up having a great nerf gunfight, it was fun to watch.

Next slide. A important part about pedestrian access routes are that they are continuous. So you have to be able to provide an accessible route through the whole length of your circulation path, and you can see that in the top left hand picture, there is a pedestrian oriented sign, but a person who is using a wheelchair can't get there. You need a continuous route to link up all of your accessible elements.

The bottom left-hand side, even temporary structures, people don't think about when they put signs or even work zone cones in the middle of the sidewalk, that they have disrupted a route that people need to get through. It needs to be continuous. And in the middle picture there is a crosswalk with a curb, obviously, that pedestrian access route ends at the curb, and does not provide access or a safe place for traffic to wait for traffic at the curb.

On the right is a picture that is pretty common in my neighborhood, in fact, that is my neighborhood, trash cans

on the street, and I know some of those driving today, there is trash cans on the street and people can't get down and around. I can slip off the curb and walk in the street. Somebody who uses a wheelchair would have difficulty getting into the street and may not be as safe. That is something that you can effect with policy. Think about how you are going to address situations like that.

Next slide. We are on slide 34. We are going to talk about the minimum accessible criteria for pedestrian access routes. Clear width, grade and cross slope, surface characteristics, protruding objects and clear spaces. These are all very simple concepts. They are just hard to apply.

So slide 35. Clear width has to be continuous. The minimum clear width for a pedestrian access route is four feet. That is the minimum. But it's, if it's less than five, you have to have a 5 by 5 passing space. If you were using the building standards in the public right-of-way, the minimum width would only be 36 inches. That is one of the benefits of using the public right-of-way guidelines, is that you have that extra width, and people move faster when they are in an exterior environment, than when they are in a building environment. You end up carrying packages, you may have a person using a wheelchair who also has a service dog, so that extra width is really important.

When you are building a shared use path, the entire width has to be accessible, and meet the accessibility requirements. So, the Access Board did not design or did not decide on minimum design criteria for shared use path. That is generally given by Federal Highway and

AASHTO and typically it's ten feet, there are some situations where you can go down to eight feet. A lot of places if you have a high volume of people, you need to have 14 feet or more. No matter how wide it is from edge to edge, it has to meet the accessibility requirements.

Slide 36. You have to have continuous clear width, if you have an obstruction in your sidewalk area, you have to go around it and provide the same four foot width. In the building guidelines, you are allowed to reduce your width to 32 inches to get around an obstruction. The public right-of-way guidelines, that is not the case. The reason for that, again, is people are moving faster, they may be carrying packages, and there is a fear that if there is an allowance for 32 inches that people will automatically go to that dimension rather than making their sidewalks 40 inches or 38 inches or 46 inches. So they are required to be 48, if it's technically infeasible, then you have to make them as wide as possible. Next slide -- oh, let's go back to slide 36. One of the places where this comes up is driveways. When you are trying to cross a driveway, sometimes it can be beneficial to reduce the width of the sidewalk, so that you don't have to make the approach to the driveway as steep. That is one of the times where it may be technically infeasible, because you may have to buy excessive right-of-way and do things that are outside of the scope of your project. That is where it's important to get as much width as you can. When we talk about getting as much width as you can, if you are down to less than 32 inches, people probably are not going to be able to use it. You might as well just end your sidewalk. So it's really important to get the full width when you can.



Driveway is a place where sometimes you have to compromise but do the best you can. Slide 37. Slopes, are what get people in the most trouble with compliance. We talk about slopes, slope is just rise over run, go back to geometry, cross slope is the slope that goes side to side. If you look at the picture on the left, the cross slope is not allowed to exceed 2 percent on a pedestrian access route. That is one foot of rise for every 50-foot of distance. The reason cross slope is important, if the world were flat it would be easier for people who use wheelchairs. But when we are outside on a sidewalk or a trail, then it's important that we also get drainage, so that we can get the water off the sidewalk. We don't have puddles.

So, 2 percent is the maximum. When we look at running slope, that is the slope in the direction you are traveling. Are you going uphill, are you going downhill? Public right-of-way guidelines allow you to make the grade of your sidewalk the same grade as your street. If you are constrained by the street.

If you have a pedestrian access route that is not constrained by the street, then your grade can only be five percent which is one foot of rise in 20 feet of run. Sometimes there are constraints. When you run across constraints, and those could be drain, they could be environmental or legal constraints, then you have to make your pedestrian access route accessible to the maximum extent practicable again.

Slide 38. Cross slope, like I said, cross slope is a important, flat is better if you have to use a wheelchair, but we need 2 percent or we need some cross slope for drainage. Something that you probably will never see in

the standard and it's kind of a part of the art of pouring concrete, is that as you are running slope, your running slope increases, your cross slope can be minimized. If you look at the picture on the right, how much cross slope do you think you need to have water run down that hill? You don't really need any. Same with the curb ramp when we talk about curb ramps next time, how much cross slope do you need to make water run down a ramp? You don't need any. It's a matter of training your contractors, training your designers to minimize slope wherever they can. Slide 39. Again, when you have running slope and grade, you want to make it as flat as possible. You can make it the same grade as the street. People on the sidewalk have to get to the top of the hill at the same elevation as the people on the road. That makes sense. But when you are not constrained by the street grade, 5 percent maximum, and a best practice for running grade or running slope or grade is that as your grades get steeper, it's helpful to make your path wider. I have several friends who use wheelchairs, and a lot of times when we are going downhill I just get out of the way. It allows them to reduce speed, so that extra width can be really helpful. If you had to use the building standards for 2010 ADA standards your grade would be limited to 5 percent. Or you would have to use the ramp requirements up to 8 percent. There are a lot of places in the country where the road is much steeper than 8 percent even. Slide number 40. Here is an example when the pedestrian access route is not constrained by the street. If you have a independent pedestrian bridge, the maximum running slope is 5 percent. You still can have a little cross

slope for drainage, but there is no reason to have a full 2 percent. Sometimes you will have regulatory constraints that make this difficult to meet, because you have to have a clearance for trucks or something under the bridge. If your sidewalk just goes beside a road on a bridge, then you are still constrained by that road. Slide 41.

Compound slopes are when you have running slope and cross slope in the same space. These are really difficult and dangerous for people to maneuver. If you think about a wheelchair or the legs of the walker, they are pretty rigid. If you think of grandma and her walker coming down the sidewalk, and she comes to a compound slope, like the one in the picture, one leg of the walker is going to come down the slope before the other leg. That is a dangerous situation. It creates a lot of instability. You can see the little guy in the picture is concerned about sliding out into the road. Also it takes a lot of effort to maintain your balance in that type of situation. It really does become dangerous. You end up with those situations in driveways, if your sidewalk is not wide enough, you end up in that situation a lot of times if you have old curb ramps that don't have landings, and they should be parallel curb ramps, but they are kind of in the middle of the sidewalk. It is difficult and dangerous for people.

Slide 42. What about construction tolerance?

Construction tolerance comes up pretty often. The building standards and the right-of-way guidelines have the exact same guidance on this. You are allowed to have industry tolerance except where dimensions are stated as the range. If you are told something has to be exactly 36 inches high, then you are allowed to have construction

tolerance. But if you have a 36-inch high maximum, then that is a range, because you can put it anywhere below 36 inches. So when we look at slope, slopes are actually ranges. If you have a 5 percent maximum slope, your range really is 0 to 5 percent, or minus 5 to plus 5. There is no industry tolerance. Can you round your numbers? Rounding is allowed in the public right-of-way guidelines for dimensions that are based on ratios. The problem with that is, Department of Justice and Department of Transportation don't necessarily agree with that. If you try to round, you are risking being told that you can't do it. Don't try to rely on rounding. If you have 2.4 on your digital level for a cross slope, and your maximum is 2 percent, you should probably consider it out of compliance.

Methods of measure, how are we supposed to measure all this? Everybody does it different. Somebody might have a 2-foot level, somebody might have a 4-foot level. I've seen a lot of disputes where they get out the survey transits to take measurements. There is no federal guidance on how you are supposed to measure. Techniques have changed, these were written in the time of bubble levels and steel tapes or even wooden measuring sticks. So the important part is that when you have a project, that you talk to your contractors, you talk to your inspectors, and everybody is on the same page. So a 4-foot level is more forgiving than a 2-foot level. A 2-foot level will pick up changes in slope, that the 4-foot level may bridge. So there is nothing that says what you have to do. But if your contractor is using a four foot level then your inspector is using a two foot level, they are going to

have some disagreements.

Everybody being on the same page is the important part to that. I don't know any professionals that have to fly around the country that are carrying 4-foot levels. So D.O.T., DOJ, inspectors, SME, we carry 2-foot levels. They are a little more restrictive than a 4-foot level.

So just a thought. So, what do you do about construction tolerance? You have to account for it in design. Best practice is that you reduce your design standards to account for the tolerance that you expect to see in the field. So 2 percent, 2.0 is the maximum for cross slope. If your design standards have 1.5 percent, that gives you a little bit of room for the contractors, finishers to be a little bit off without actually having to tell them to tear out the sidewalks. The same thing with running slope. If you specify a running slope of 5 percent, dropping down half a percent and designing for that will make it more likely that your construction will be accessible when the concrete dries. Again, clear width. Some inspectors are so picky, that they will go from the edge of the level, to the edge of the next level, and not count that little bit of concrete in that half inch rounded bevel on the sides which will put you short of 48 inches, if that is all you designed to. Best practice is going to be that you account for the construction variance in your design, and if you expect the contractors to do this in the field, you are doing them a real disservice because if your design only gives them a certain amount of space to work, but they have to flatten the slopes to allow for tolerance, things may not fit right. Everybody has to work together to make this work.

Next slide. The surface requirements for pedestrian access routes seem to be kind of vague: Firm, stable and slip resistant. We don't have any measurable guidance for that. There is, there are some devices that are under development for firm, and stable just means it stays in place, slip resistant if it gets wet outside, you shouldn't be, it shouldn't be slippery to walk on. No large openings or gaps, and minimum, minimal vertical discontinuities. Slide 44. Surface requirements, firm, stable and slip resistant, we don't have measures for those. But concrete and asphalt pavement generally fit that description. You can use brick or paver surfaces, if they are flush. Wire cut brick which means it has, each brick has a 90-degree corner on it all the way around, and they fit flush up against each other, actually have a better roll ability than concrete or asphalt. Unfortunately, they are very hard to maintain. So they take a lot to install correctly, and even when they are installed correctly, they get out of place over time. What about grass, is grass ever accessible? The answer to that is no. If your bus stop is sitting out behind the curb and the only way to get there is walking in the grass, that is not firm, stable and slip resistant. It may feel that way today but tomorrow when it rains, it won't be. Wheelchairs that have people in them can weigh six to 800 pounds sometimes. Those are the load limits on a bus ramp. So a wet muddy goat path is not an accessible route.

Crushed rock can sometimes work, if it's installed correctly and maintained. If you wet your crushed rock, roll it in with a roller, wet it again, roll some more, it can work. But it's difficult to maintain. Loose mulch is never

accessible. If you have a loaded baby stroller or if you think about a heavy grocery cart trying to push through peat gravel or mulch, you are going to sink. Something that has a loose surface is difficult for a person in a wheelchair to use.

There is a surface research report on the Access Board Web Page. If you are building a shared use path or pedestrian path in a less developed area, and you are wanting a more natural surface, you might look towards the Access Board's research page to get more information.

Next page, another surface requirement is no large openings or gaps. 1/2 inch in the direction of travel is the maximum. The reason for that, you can see on the page on the right, wheelchair casters are sometimes very small, and very hard. They are narrow and small, they can slip down into the cracks of the drainage grate. It's difficult to get out. People can be trapped there. It's important, and if you have utility grates like on the left-hand side, you will need to put them in the right position when you do construction, but when the guys go in and flush out storm sewers, they are not going to think about it when they put those lids back on. So there are pedestrians friendly grates available, look into those. You have to watch with expansion joints on sidewalks. A lot of times they can be filled, tree grates can sometimes be a problem. It's a maximum half inch in the direction of travel. Next slide. Slide 46. Another surface requirement is to minimize the vertical discontinuities. If you have a bump in the sidewalk, it can have a vertical face to it if it's less than a quarter of a inch. It can be up to a half a inch, if it's

beveled at two to one. You can combine that vertical and beveled area if the top is Beveled. But you can only do that up to 1/2 of a inch, kind of like a threshold when you combine them.

Anything more than that has to be built to other standards. So 5 percent or the same grade as your road or 8 percent for a ramp. Any time you have a change in slope, we call that a grade break. If you have one grade of 2 percent and then a next panel is 5 percent, where those two different slopes meet is considered the grade break. It has to be flush. You have to be able to go from surface to surface without any vertical discontinuity.

Next slide. Slide 47, we just said that gaps can only be a maximum of 1/2 of a inch. There is an exception to that for the flange way gaps at railroads, and where your sidewalk crosses a railroad, if it's, the track says for light rail only, then the maximum gap that person has to cross is two and a half inches. If that track is shared with freight or it's a freight train track, then the maximum gap is three inches. So, that is a whole lot more than half a inch. There are gap fillers that are available. They are difficult to find. But I believe that they are used widely in Europe, and I believe some cities are beginning to use them in their light rail areas. Whenever a person using a wheelchair has to cross one of these flange way gaps, there is a chance that the caster could turn sideways and slip down into that gap. Three inches gives plenty of room for that to happen. So, that is something that is really important to try to mitigate that the best you can.

Slide number 48. Now we are going to talk about circulation paths. This is different than pedestrian access



route. The circulation path is anywhere a person can walk. If I have a sidewalk that is 15 feet wide from the face of the building to the back of the curb, only four foot of that has to meet the pedestrian access route requirements for width, slope and the surface discontinuities.

It has to, the pedestrian access route within the circulation path has to be continuous. So circulation path again is anywhere a person can walk, and where this becomes important is when we talk about protruding objects. And the protruding object requirement applies to the full width of the circulation path, not just the four foot accessible pedestrian route. There is a four inch limit to the protrusions. And that applies between 27 and 80 inches above the surface. We are going to talk about that more in a minute.

Next slide, 49. Ramps, we have requirements for ramps. The requirements in the public right-of-way guidelines and the requirements in the 2010 standards are exactly the same. The slope maximum is 1 in 12 or 8 percent. You have the cross slope maximum of 2 percent. Again, how much cross slope do you need for water to run down this ramp? You don't really need any. Clear width is 36 inches. That doesn't change, even if the ramp is in the public right-of-way. If you have to have a ramp from the sidewalk up to the door of a business, you can do it at 36 inches and not take up as much sidewalk area. The rise is a maximum of 30 inches, and then you have to have level landings at the top and bottom. Continuous handrails, and you have to have edge protection. So a person's wheels don't roll off the side.

Slide 50. The requirements for handrails are the same as the ADA standards also. You have to put them on ramps, stairs and walkways where they are required. Knuckle clearance is important so you can reach all the way around the handrail. There is maximum diameter, minimum, maximum, so this is one of the ranges, one and a quarter to two inches, and that applies to the outer diameter. For circular and noncircular cross sections, you can have four to six and a quarter inch measure around the cross section.

Next slide. Protruding objects, when we talk about circulation paths, I mentioned protruding objects, you can't have protruding objects anywhere in the circulation path. A protruding object is anything that sticks out more than four inches, in the range of 27 inches high to 80 inches high. Below 27 inches, a person will probably detect it with their cane. If you look at the picture on the right, that is a pretty good example. They have put a barrier underneath a open stairway, and a person is going to find that with their cane before they run into it with their head. If you post mount objects and when we talk about the public right-of-way, that is generally signs, parking signs, pay station signs, work zone signs, they can't protrude more than four inches beyond the base or the pole. So you can put a base, if you have a diamond shaped sign, you can put a base on it, that goes out to within four inches, if it sticks out between 27 and 80 inches. If you have a sign that is mounted on two posts, and they are spaced more than twelve inches apart, you need to put a detectable element below 27 inches, so that a person doesn't try to walk between them. Next slide, slide 52

gives some examples of protruding objects. Some of these again are from my neighborhood. A lot of times you see communities put up banners, and you have to make sure that the banners are more than 80 inches high. Vehicle direction signs, the sign on the top middle is one near a coffee shop. People walk past that all the time. It's about shoulder height. A person who is blind or visually impaired may not see that and then they would run into it. Obviously that is a problem. Push buttons that this is not a compliant push button, but it's an example of where you can find a protruding object where you might not really think about it.

Down in the bottom in the center is a memorial canon at a historical site.

The base of it protects most of the canon, but there needs to be a detectable curb or something the full length of the canon or at least to within four inches so people don't walk from the side and then straight into it.

You also notice on the picture in the bottom center that there is a light post with all kinds of signs on it, on the other sidewalk. That other sidewalk is about 36 inches, and it might as well not be there because if you come up that curb ramp on to that sidewalk, you are not going any further. Here is the last picture on the right on the bottom, is a common problem, and that is vegetation. Nobody wants to walk into wet tree limbs, if you can't see them coming. This is one of the things that you need to look out for in maintenance. It's an ongoing maintenance. You can't just trim 'em once and be done.

Slide number 53. Temporary routes also have to be accessible. If you have a temporary pedestrian access

route for a street fair or maybe a farmers market in the park, that has to be accessible, even though it's temporary. You can find maps that will provide a firm stable surface and you can make sure that vendors etcetera are located in a place where it is easy to get to and on a flatter surface.

For engineers, what we look at for temporary routes a lot of times is a work zone. When we have to close a sidewalk for construction, we need to provide an alternate route. The right-of-way guidelines, 2010 standards, they don't address how to do a work zone. The manual on uniform traffic control devices, which is Federal Highway book, chapter 6, covers work zones, and it covers pedestrian routing and signing, the proper barriers for protection and what criteria are required, and discusses channelizers for guidance and way finding. So nobody reinvented the wheel. We are counting on the MUTCD to make sure that people make their work zones accessible. There is an allowance for a temporary lack of access, for maintenance. Just like if a elevator went down in a building, there is not much you can do about it, except wait until it's fixed. The expectation though is that you maintain your accessible features, and that they are fixed as quickly as possible.

Slide 54. Here are work zone examples. You can see on the top left that there is the sidewalk closed sign, and a detour sign. For a person who is blind, they are going to detect that but they obviously are not going to be able to read the signs. There are some other options out there that are proximity controlled, so just like a motion sensor, when someone gets to that point, it will audibly say,

sidewalk is closed in 200 feet, or cross here, sidewalk closed ahead. So there are a lot of other options out there. The picture shows some of the devices that are used, the diagram in the center at the top is right out of the MUTCD. It gives you some templates setups, and there are a lot of other work zone guidance books out there.

ATSSA which I'll never remember what it stands for, ATSSA, has great work zone guidance documents also.

The top left, so for one thing that I didn't put up here is cones and yellow tape. We see that all the time, especially in the really short term work zone. Those are absolutely not effective. The one on the top right is a little bit risky from a contractor standpoint, they have provided a surface that people can use, for a person who is visually impaired they may have difficulty finding their way knowing for sure that they are where they are supposed to be, and not in the middle of a construction site. But mostly, that is a risk for a contractor. And it's certainly not something you would put in your policies.

The bottom right is something I came across out walking last summer, no warning, nothing. Just a big pile of dirt and construction barrels and equipment left in the middle of the road overnight. Here are some good things, the barriers on the bottom are, meet the requirements, you can find them, they are not that difficult to purchase and store. Then there's bad examples too. Next slide.

Maintenance, so, the ADA regulations require maintenance of accessible features, so if you build a sidewalk, you are going to maintain it forever. And that is the responsibility of having pedestrian facilities. You are allowed to have temporary lack of access, so if you have a

sidewalk panel that is out because you are putting utilities in, you have to determine how long is too long. There isn't much guidance on that. It's long enough to get a complaint, it's too long. Best practices, you need to make sure that you have policies, policies that reflect good access and keep your maintenance up to date. So, in the spring and in the fall, do you have a policy to go through and trim brush? Do you have the equipment and staff that you need to do that? The bottom picture, you can see the creek has come up during a big storm event, people are still using the shared use path that runs under this bridge. They are using it because they don't have a choice. That is how they get where they need to go. That needs to be cleaned up, it is a temporary lack of access, because it certainly is not firm, stable or slip resistant. But it needs to be cleaned up quickly, and there needs to be a policy that says, you know, and after certain storm event we will check these paths and clear them off, and have equipment and staff to make sure that it happens.

The same happens for snow removal. People in the northern part of the country, you have snow, comes every year. What are you going to do about it? When it blocks your sidewalks and blocks your curb ramps, those are maintenance requirements that need to be addressed. Federal Highway has a maintenance guide, if you look up pedestrian maintenance guide on Federal Highways in their safety section, it has good guidance.

Again, tree trimming, it's just a necessary thing that has to be done. Slide 56, so here is just some best practices. If you want to minimize your chance of having a lawsuit, or having the Department of Justice S.W.A.T. team come

knock on your door, listen to your public and accommodate their requests. If you have somebody that says, there is a big chunk out of the sidewalk, and I can't get through here, you need to pay attention because people will ask nicely for quite a while but eventually they are going to find DOJ's website. And it's easy to file a complaint. So be kind, be considerate and accommodate requests or mitigate a problem a person might be having. In general, maximize clear widths so people can get around. Minimize slopes, flatter is better. Consider the impact of compound slopes, and avoid them. Make sure that your design standards take into account the construction tolerance you need for finishing concrete. Standardize the method for inspection. It's a good idea to have a inspection checklist, that helps to have a similar design checklist, but that way your inspector knows what they are looking for. You can document it, the contractors know that they have met their requirements, and they have done what they were supposed to do, and now you can pay them, and everybody is happy. Inspection is really important.

Look at your maintenance schedules, make sure you have routine maintenance checks. Then look for low-hanging fruit. You may have old sidewalks that have a lot of debris in them from trees or settlement from utility trenches, those are low-hanging fruit. There are ways to grind or cut those. You can see the picture on the bottom. The sidewalk panels had shifted and it was going to be a long time before that cross slope is going to be adjusted and corrected. But the cross slope is not as big a problem as the vertical discontinuity. If you talk to your attorneys,

your trip and fall settlements are usually pretty high, and even if you are not meeting all the accessibility requirements when you do a small improvement like this you are making things better for everyone.

Slide 57. So here are some real basic links for resources. The Access Board is your best resource for public right-of-way information and help. You can go to their website. When you look for the latest version of the public right-of-way guidelines, it's the 2013 supplemental notice of the proposed public right-of-way accessibility guideline. That is actually in their shared use path section. It's called supplemental. You can contact them for assistance, and their E-mail address should be row @ access-board.gov, so ignore the WWW. You will get a response, generally in writing. Sometimes you will get a phone call, if it's better to have a conversation.

Federal Highway, ideally work through your state division office. The federal highway administration has 50 different offices. You don't always get the same answer from all 50 states. Some of them are really on top of accessibility. Some of them, not so much. But if you can't get the answers you want, or if you can't get the right answer, it might not be the one that you want, you can always call the Access Board. They can provide you some additional guidance on who to contact. The Department of Justice has a section for Title II technical assistance. Their website is just ada.gov. You can also see their latest enforcement, which is kind of an interesting thing to look at. Slide 58. I think we are done. We are going to turn it over to Nancy for questions.

>> At this point, we can take questions from the



audience are, you can submit your questions or comments in the chat feature. You can press control M on your keyboard or command M. Or you can E-mail us at [adatrain@TransCen.org](mailto:adatrain@TransCen.org). I will turn it over to Nancy to present the questions. Nancy?

>> Thanks, Maynor and thank you, Melissa, for that great information. We do have a few questions that we have had submitted ahead of time. We will start out with those. In the meantime, Maynor, I'm not sure if you can restore my moderator status in the webinar platform, so that I can see any questions coming in to the chat feature. But we will start with a couple that we have had submitted. Melissa, could you talk a little bit more about the issues about temporary pedestrian routes around work zones? If the existing facilities, the original facility is not accessible, should there be any concern about the accessibility of the temporary route?

>> MELISSA ANDERSON: So, that is a really good question. I hear that a lot. The MUTCD actually says that the alternate route has to be as accessible as the existing facility. But best practice would be to make the temporary route or the alternate route fully accessible, if possible. So if a person has to go from the sidewalk into the street, it's obviously there wasn't a curb ramp there before, and even if there was a curb ramp at the corner that wasn't accessible, putting in a temporary curb ramp that meets the requirements is the right thing to do.

MUTCD says it has to meet the existing, has to be as accessible as the existing facility. But that is a minimum. If you can do better, you probably should do that. Most people make --

>> Thank you.

>> MELISSA ANDERSON: Have a policy that they are fully accessible.

>> NANCY: Excellent, that is always a smart move, isn't it? We have another question, someone is hoping that you could speak a little bit more to railroad crossing issues, as far as who is really responsible for that, or is it collaboration that needs to happen when you have to have pedestrians crossing a railroad tracks?

>> MELISSA ANDERSON: That's a good point, Nancy. It is collaboration, but railroads are notoriously difficult to work with. But if you build a sidewalk across railroad property, if you are a city or county or state, you are responsible for making sure that that railroad crossing is maintained to be accessible. And scheduling that out, you have to plan to work with the railroads for quite a ways in advance, and it does take collaboration for it to happen. They may have specific material requirements, and may prefer to take part in some of the construction.

>> NANCY: Thank you. We actually have a couple of questions that I think are sort of along the same lines, that are really looking to understand the difference between new construction, alterations and maintenance. For example, if you have to replace a whole length of sidewalk, because it's become so cracked and heaved or it has been maybe destroyed in a disaster, is that going to be considered new construction, an alteration or maintenance?

>> MELISSA ANDERSON: Any time that, an alteration is defined as something that changes the usability of a facility. If you are taking out something that is damaged or

that is too narrow, you are actually changing the usability of that facility, and it's considered an alteration. Even if you are replacing it in kind, you need to make the alteration accessible to the maximum extent practicable.

>> Thank you, that helps a lot. We have another question about cross slope. Could you explain a little more about why a cross slope greater than 2 percent is problematic on a level walking surface?

>> MELISSA ANDERSON: So cross slope, as a person who is using a wheelchair is going down the sidewalk, if you have excessive cross slope, it takes a lot of effort to maintain a straight direction. So a person has to, if you think about going across a down hill, crossing the street that is going downhill, you have to have a lot more effort pushing one wheel to keep yourself from turning and going down the hill. And when you think about it in that extreme example, I mean that's easier to understand, but if you are constantly fighting to keep from going downhill on your cross slope, it takes a lot of extra effort. For people who use wheelchairs, especially people who use manual wheelchairs, almost always over time will blow out their shoulders, and if you have to go a mile or two to work or even four or five blocks from the metro to your office building, or to school, that extra effort may make the difference in the activities that you get to participate in, because you are always exhausted. Physically, your body just wears out.

So the 2 percent max is really as a max and it really is important to the people who depend on us making things accessible. Also, if you ever close your eyes and walk down a sidewalk with bad cross slope, you tend to go

towards the downhill side of the cross slope. Even for a person with balance issues or vision impairment, it can create some difficulties.

>> NANCY: Thank you. We have a question about this concept of impracticability, and could you speak to that a little bit more at all about what that really means?

>> MELISSA ANDERSON: When we talk about technical impracticability is the preferred term, impractical and infeasible, are basically the same, it means if something is going to take extensive effort and I can't define that for you, or if it's just absolutely impossible, then it's considered technically impractical, or impracticable or infeasible. If you have, one of the situations where it comes up on sidewalks is if you are building a pedestrian bridge over a railroad, the railroad has a requirement for a clear distance in height, so if you don't have enough right-of-way or you are constrained by other environmental issues, you may not be able to get a 5 percent pedestrian path and meet that regulatory requirement by the railroad. So then you would do the best you can. And you would make it accessible to the maximum extent practicable. You might do other things to mitigate that excessive slope that you can't really completely eliminate. Like making the path wide enough so that a person can go back and forth as they go down the hill. It gives people more maneuvering room going uphill.

So technically impracticable and technically infeasible is relative to what you are doing and if you are using it as an excuse, then, you can define it widely. But you may have to defend it some day in court. If you choose to say something is impracticable, you need to feel comfortable

that other people would see it the same way and agree with you.

>> NANCY: That is helpful, I think that is really helpful, some examples of some good guidance there. I think that may be all the questions that we had. We do have, I'm not sure if you want to talk about this today, we do have a question about diagonal curb ramps. But I'm not sure you want to speak to that. Would you like to talk a little about diagonal curb ramps?

>> MELISSA ANDERSON: We are going to cover curb ramps in the next webinar. But I know I've purposely made this a little short so we would have time for plenty of questions. We are going to talk about resurfacing and curb ramps next time. One of the reasons, we are going to talk about diagonal curb ramps but we can talk about it now too, is a lot of people want to put in diagonal curb ramps because they feel that one curb ramp is less expensive and less problematic than two, and the problem with that is that you need a curb ramp for each street crossing. There are some good slides for that, that we will show, the disadvantage to diagonal curb ramp is that it's directed towards the center of the road, and so a person who has a vision impairment, if they use that diagonal curb ramp may get to the bottom of the curb ramp, and then they have got to reorient themselves and find the crosswalk and get squared up with the world again. Meanwhile, they are standing out there at the apex of the corner, and they are much more vulnerable to traffic.

It's important to have a curb ramp for each street crossing. Another question that might come up, well, we can look at diagonal curb ramps and impracticability too,

and sometimes in a steep terrain, if you have two steep roads that intersect, it may be technically impracticable to meet the slope requirements in your construction. You might find that a diagonal curb ramp does a better job of serving that purpose than two separate curb ramps.

That would be making something accessible to the maximum extent practicable and having that compromise of building a diagonal curb ramp because that actually works better based on the terrain, than if you had built two curb ramps that were both a lot less compliant.

>> NANCY: That is a great answer. I think that is a great segue to talk about our next session, a good teaser for our next session. So we have just a few minutes left until the bottom of the hour. I think maybe we will move on to slide 59, and do a little bit of wrap-up for our session today. The next session, part 2 is going to be on intersections, safe and accessible intersections, Melissa will be talking about curb ramps, street crossings and signals. After that, part 3 is about curbside access. We will learn a little about transit stops, parking, passenger loading zones, and the final part 4 in our series, ensuring access on public right-of-way projects, we will talk about some design issues, construction inspection and best practices. So all things we can look forward to.

On slide 60, we want to share this information with you for those of you who need a certificate of participation, or the LU/HSW credit for AIA. The word of the day is sidewalk. Sidewalk. So, please consult the reminder E-mail that you received about this session for instructions on obtaining that certificate of participation for this webinar. For the code, you can please E-mail the code to

adatrainig @ TransCen.org, by 5:00 p.m. eastern on Monday, May 6, this coming Monday.

Also, keep your eye out for an E-mail about our evaluation. We appreciate if you would fill out an evaluation, provide us feedback on today's session. We appreciate that feedback, and on our next slide, we have just provided our contact information for us here at the Mid-Atlantic ADA Center, project of TransCen. We would like to thank you all for joining us today, and we would especially like to thank Melissa Anderson for presenting us all this great information today. It's been a wealth of information. I know I've learned something. I'm sure everyone else did. Please feel free to contact us, if you have additional questions. We will hope to see you all back here for our upcoming sessions in this series. Again, thank you all for joining us, and have a good day.

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